TITLE:

Exploring the role of self-efficacy beliefs and learner success in English Medium Instruction

AUTHORS:

Gene Thompson
Department of Global Business, Rikkyo University, Tokyo, Japan
Email: thompson@rikkyo.ac.jp
ORCID ID: 0000-0002-2406-1364

Ikuya Aizawa
Department of Education, University of Oxford, Oxford, UK
Email: ikuya.aizawa@education.ox.ac.uk
ORCID ID: 0000-0003-4588-6194

Samantha Curle
Department of Education, University of Bath, Bath, United Kingdom
Email: samanthamcurle@gmail.com
ORCID ID: 0000-0003-3790-8656

Heath Rose (corresponding author)
Department of Education, 15, Norham Gardens, University of Oxford, Oxford, UK
Email: heath.rose@education.ox.ac.uk
Phone +44 (0) 1865 274024
Fax +44 (0) 1865 274027
ORCID ID: 0000-0002-6434-6663

Keywords: Japan; English Medium Instruction; Self-efficacy; Self-Concept; Proficiency

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ABSTRACT:

English medium instruction (EMI) is a growing phenomenon in higher education contexts across the globe, and EMI programs are expanding rapidly in Japan as part of their internationalization efforts. This paper explores the relationship between student self-beliefs and their success in an EMI course within a bilingual business program. It analyzed direct measures of content course and preparatory course performances, proficiency, and questionnaire data from 139 students completing an English-mediated International Business course at a university in Japan. These data were supplemented by interviews with seven students. Multiple linear regression analysis found L2 proficiency, preparatory course performance, and self-efficacy to predict success in the EMI course. Our qualitative findings support these results, indicating that students with stronger efficacy put forth more effort and see course activities as development opportunities. These findings highlight the need for efficacy development opportunities for students entering EMI study.

Keywords: Japan; English Medium Instruction; Self-efficacy; Self-Concept; Proficiency

WORDS: 6590 (counting references)

Introduction

English medium instruction (EMI) has been defined as "the use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions where the first language (L1) of the majority of the population is not English" (Macaro, 2018, p.18). Due to a focus on internationalization within higher education, there has been strong growth in EMI across the globe, with countries in Asia rapidly expanding the number of EMI programs (Galloway, Kriukow, & Numajiri, 2017). In Japan, the setting of the current study, recent government policies have promoted the growth of EMI programs by providing funding and support for selected universities to lead the internationalisation of Japanese higher education (see Iino, 2018; Rose & McKinley, 2018).

The Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) has defined EMI as courses conducted entirely in English, excluding those whose primary purpose is language education (MEXT, 2014), indicating that success within EMI is primarily focused on the development of content knowledge. Many Japanese scholars see English language development as a dual aim of EMI (e.g. Taguchi, 2014), and language support is often integrated into most programs. Certainly, evidence indicates that L2 proficiency can, and does, contribute towards EMI success (see Rose, Curle, Aizawa & Thompson, 2019; Li, 2018).

However, success in EMI is not only reliant on English proficiency (Bradford, 2018). Other variables, such as self-concept, self-efficacy, and motivational self-constructs (e.g., Ideal L2 Self, see Lasagabaster, 2016) may directly or indirectly influence student performance. Although few studies have examined self-beliefs as predictors of EMI success, extant research from the wider education field indicates that self-efficacy (Roo, Ardasheva, Newcomer, & Vidrio Magaña, 2018; Liu et al., 2018;

Liu, Gao, & Ping, 2019) and self-concept (Bong, Cho, Ahn, & Kim, 2012, 1999; Parker, Marsh, Ciarrochi, Marshall, & Abduljabbar, 2014) beliefs have significant, predictive relationships with student performance (Chao, McInerney, & Bai, 2019). This study responds to calls for research into factors that predict academic success in EMI contexts (e.g. Lasagabaster, 2016; Macaro, 2018; Macaro, Curle, Pun, An & Dearden, 2018), by investigating the role of self-concept and self-efficacy as potential predictors of EMI success.

Background to the study

Success in EMI

In the context of the current study, we examine the conceptualisation of 'success in EMI' by exploring student mastery of content knowledge, which is in line with previous research into EMI success (Airey, 2012; Costa, 2012; Li, 2018), and is also consistent with the definition of EMI proposed by MEXT. We realise, however, that 'success' could be defined in a multitude of other ways (e.g. satisfaction, job placement, academic enlightenment). Nevertheless, for the purposes of framing our research and operationalising our constructs, we adopt this narrower conceptualisation of success.

Predictors of EMI success

A few previous studies have explored factors that affect student disciplinary learning, such as the role of L2 English ability, motivation, preparedness (i.e. student performance in preparatory courses), and lecturer's pedagogical competence. In the context of Japanese higher education, Bradford (2018) has suggested that faculty members and their pedagogical competence play a crucial role in the internationalisation processes of their institutions. In another study carried out in the

Republic of Korea, the introduction of a language support course appeared to assist students in preparing for their EMI classes, as the facilitative environment of the course structure enabled students to develop confidence and confront anxiety about completing academic tasks via English (Chang, Kim, & Lee, 2017). More recently, we carried out a quantitative EMI study that examined the content knowledge of 146 Japanese L1 EMI students majoring in international business at a Japanese university (Rose et al., 2019). In this study, we demonstrated that students' English language proficiency and academic English skills were statistically significant predictors of success in EMI. However, this study did not report other factors that may predict success in EMI, such as the potential influence of self-beliefs, indicating a need for further investigation of the data. This paper aims to fill this gap.

Self-beliefs and academic achievement

The actions that learners take throughout the process of learning may be based on their expectations of their own performance, as well as their perceptions of their own competence. Consequently, learners with stronger self-beliefs are likely to expend more effort in their pursuit of academic success (Hackett & Betz, 1989; Pajares, 1996). Two types of self-beliefs have received significant research attention: (1) self-concept beliefs, and (2) self-efficacy beliefs. Although both constructs centre around perceptions of personal competence (see Bong and Skaalvik, 2003), they differ by generality and in orientation (Mercer, 2008). Self-concept (SC) beliefs involve evaluations of ability and normative comparison with others towards "self-set standards of worth and competence" (Parker et al., 2014, p. 31). In other words, they represent a summary of the beliefs that individuals hold about themselves towards a domain of activity, incorporating comparison with others, perceptions of ability, and their affective

reactions to past experiences. On the other hand, self-efficacy (SE) beliefs reflect task-focused perceptions of capability to bring about actions to achieve outcomes (see Bandura, 1997). They are expectancy beliefs of the capability to perform to a certain level within a certain domain (Mercer, 2008). Efficacy beliefs are future-oriented and involve (primarily) cognitive perceptions of skill towards specific tasks.

Foreign language self-efficacy (i.e., expectancy beliefs of capability to achieve outcomes via use of the L2) and L2 self-concept (i.e., self-beliefs that individuals have about themselves with respect to their foreign language ability) have been shown to have significant positive relationships with language learning (e.g., Mills, Pajares, & Herron, 2007; Phakiti, Hirsh, & Woodrow, 2013), and both English language self-concept and self-efficacy have been identified as predictors of language learning achievement (Chao, McInerney, & Bai, 2018). Research (e.g., Chang et al., 2017) has indicated that EMI language support and preparatory programs can help students develop knowledge and positive self-beliefs towards academic English tasks and EMI study. Indeed, even though the participants in the Chang et al. (2017) study did not noticeably improve their English skills, the focused program appeared to have a positive influence upon their confidence (i.e., self-beliefs of capability) to carry out academic tasks. Accordingly, some (e.g., Graham, 2011; Thompson, 2018) have argued that EMI preparatory programs should not only aim to improve students' language ability, but to also encourage the development of positive self-beliefs, due to their influence on subsequent performance. Stronger self-beliefs appear to influence student effort, persistence, and choice of activity (see Hackett & Betz, 1989; Multon, Brown, & Lent, 1991; Pajares, 1996). Given that many bilingual students can choose whether to take classes in their L1 or English, students with stronger self-beliefs may be more likely to continue with EMI study.

However, few studies have investigated the role of self-beliefs as predictors of success in EMI programs. Research from somewhat similar contexts (e.g., with English as a Second Language [ESL] and bilingual English secondary school students studying Science via English, see Ardasheva, Carbonneau, Roo, & Wang, 2018; Roo et al., 2018) has found that self-beliefs (alongside L2 ability) influence vocabulary learning and achievement. The current study was carried out to investigate whether such relationships may also be present for EMI university learners studying within a bilingual program.

Specificity of self-beliefs and academic performance

Self-beliefs become stronger predictors of behaviour as they become more specific (Bandura, 1997; Bong et al., 2012; Choi, 2005). In other words, as beliefs become more focused upon a certain context or task, they are more likely to be predictive of performance (Pajares, 1996). For example, in a study of 746 Korean elementary and junior high school students, Bong et al (2012) found that domain specific beliefs (i.e., academic self-concept, academic self-efficacy) predicted achievement, while more global self-esteem measures did not. Also, research has generally identified self-efficacy beliefs to be a stronger predictor of performance in comparison to self-concept (Pajares & Miller, 1994; Pietsch, Walker, & Chapman, 2003), due to the greater task and context specificity of these beliefs. This study investigated whether self-efficacy or L2 self-concept would directly predict EMI success. The current study is, to the best of our knowledge, the first to examine the relationship between these variables and EMI success.

Design of the study

The current study addresses the following research questions:

(1) To what extent do self-efficacy or L2 self-concept directly predict success in EMI?
(2) To what extent do students perceive a relationship between self-efficacy and success in EMI?

Setting

As previous research has shown great variability in EMI implementation, this study focused on a single EMI course context, to reduce the influence of context-related confounding variables. The study was carried out at a Department of Business Management at a university in Japan, with second-year students, who were completing their first English-mediated lecture-style course, named 'International Business' (IB). These students concurrently took an academic development course as part of a language support EMI preparatory program, named 'English for Specific Purposes' (ESP). This course prepared students for the IB class by reviewing technical terms and key business vocabulary required for textbook and lecture comprehension before each lecture. It also provided students with opportunities to practice associated skills for actively participating in lectures, such as asking questions at the end of presentations. The ESP course included periodic quizzes and tests, involving text and vocabulary comprehension exercises related to the corresponding IB lecture or assignment. Thus, ESP scores on these tests formed our measure of preparatory language performance, while scores on IB mid-term and end-of term tests were measures of EMI performance.

Students also frequently completed language proficiency tests as part of the program, allowing for a standardized L2 measure to be included. As this was a bilingual degree, which required all learners to take both English-medium and Japanese-medium credit bearing courses, students were predominantly Japanese (more than 99%),

reducing the influence of first language and cultural differences. Learners had also completed the same standardized 18-month preparatory academic skills program and attended the EMI lectures at the same time with the same instructor, minimizing the influence of confounding environmental factors (e.g., learning experiences, teacher pedagogy).

Data collected

Data collection included the following research instruments and measures (also see Appendices):

- A self-beliefs survey, which included items related to self-efficacy and L2 self-concept.
- 'International Business' (IB) mid-term and final test scores, as a proxy measure of EMI success.
- 'English for Specific Purposes' (ESP) vocabulary and key-concept test scores, as a proxy measure of preparatory performance.
- A score on a standardized language proficiency test (TOEIC), as a proxy measure of general English proficiency.
- Semi-structured interviews with seven students (see Table 1).

In the current study, self-efficacy was assessed using a single item on a 100-point percentage scale following Bandura's (2006) guidelines. It examined student perceptions of capability to carry out academic study in order to achieve a grade level of 80% or higher in the International Business class.

L2 self-concept refers to the normative self-beliefs that individuals have about themselves with respect to their foreign language ability. This construct was measured using the average of four items adapted from Iwaniec (2014), which were assessed using a six-point Likert scale.

Participants

A total of 150 second-year business management university students agreed to participate in the study and provide the data sources outlined above. Due to missing data from 11 individuals (nine instances of missing test scores, two instances of incomplete self-belief surveys), a total of 139 instances of test and self-belief survey data were analysed. To respond to research question two and enhance the significance of our multiple regression findings, we conducted follow-up semi-structured interviews with seven students. Interviews were conducted in a private environment in Japanese, as participants may be more likely to provide adequate responses in their L1 than L2 (Lin, 2015), and lasted for approximately 25 minutes. We interviewed all students who volunteered to participate, thus the conclusions drawn from these interviews are limited by the low number of volunteers and the potential limitation of self-selection (i.e., more motivated students may have chosen to join the study). For example, as students' language proficiency has been strongly associated with their experience of EMI (e.g. students with high proficiency often find EMI less challenging than their counterparts, see Harrington & Roche, 2014), students' responses might differ by language ability. Nevertheless, the participants (see Table 1) had varying L2 proficiency, grades both for the preparation (ESP) and EMI (International Business) courses, and self-efficacy ratings. Accordingly, some insights can be gained about the relationship between self-beliefs, L2 ability, and perceptions of EMI success.

[PLEASE INSERT TABLE 1 HERE]

Table 1. Interview participants

Name	Self-efficacy strength (%)	TOEIC score	Content Grade (IB)	English grade (ESP)
Learner A	85%	790	A	A+

Learner B	80%	975	mid	high
Learner C	75%	900	high	high
Learner D	70%	940	high	high
Learner E	50%	910	mid	mid
Learner F	50%	845	high	high
Learner G	30%	645	low	mid
Full Cohort (n = 150)	44% average	771 Avg.	mid Avg.	high Avg.

Notes: IB = International Business Course; ESP = English for Specific Purposes Course; Grading scale: High (A+/A), Mid (B), Low (C); self-efficacy was measured in response to the question: How confident are you that you can successfully achieve a high grade (above 80%) in International Business when it is taught in English?

Data analyses

To respond to research question one, two multiple linear regression models were calculated to predict success in EMI (the outcome variable):

1) L2 proficiency, preparation performance, and L2 self-concept
2) L2 proficiency, preparation performance, and self-efficacy

To investigate research question two, thematic analysis of interview data was carried out. Combining both inductive and deductive approaches, main themes were initially constructed deductively based on the self-belief literature (e.g., beliefs about oneself, beliefs about one's capability, perceptions of task difficulty, perceived skills, anxiety, effort) and inductively from the empirical interview data (see Zhang & Wildemuth, 2009). That is, the researchers engaged in a close examination of the transcripts, which were coded based on the themes which emerged from the literature. Subsequent analysis ascertained new emergent themes and instances from the transcripts which further illuminated the nature of each theme. For example, the interview data were used to explore the relationship between perceptions of L2 ability, self-efficacy and academic achievement. A list of initial categories was constantly checked and revised as new

categories were identified through the later cycles of coding (Huberman & Miles, 2002). These cycles identified repeated patterns that emerged from the data (see Braun & Clark, 2006) related to relationships between self-beliefs (e.g., confidence, perceived L2 ability), EMI success, and preparatory performance.

Results

Self-beliefs as predictors of EMI success

To address research question one, two multiple linear regression models were calculated to predict success in EMI (IB scores). Descriptive statistics are presented in Table 2, which show that no variables were significantly skewed or kurtotic. In our first analysis, we investigated L2 ability (TOEIC scores), preparatory performance (ESP course test scores), and L2 self-concept (see Table 3). In the second, L2 proficiency, preparatory performance, and self-efficacy were examined (see Table 4). The assumptions for multiple regression were confirmed for each analysis: linearity, independence, homoscedascity, and normal distribution of errors (Keith, 2015). An analysis of standard residuals was carried out, involving examination of Centered leverage, Cook's distance, and Mahalanobis distance values; this indicated no influential cases.

[PLEASE INSERT TABLE 2 HERE]

Table 2. Descriptive Statistics

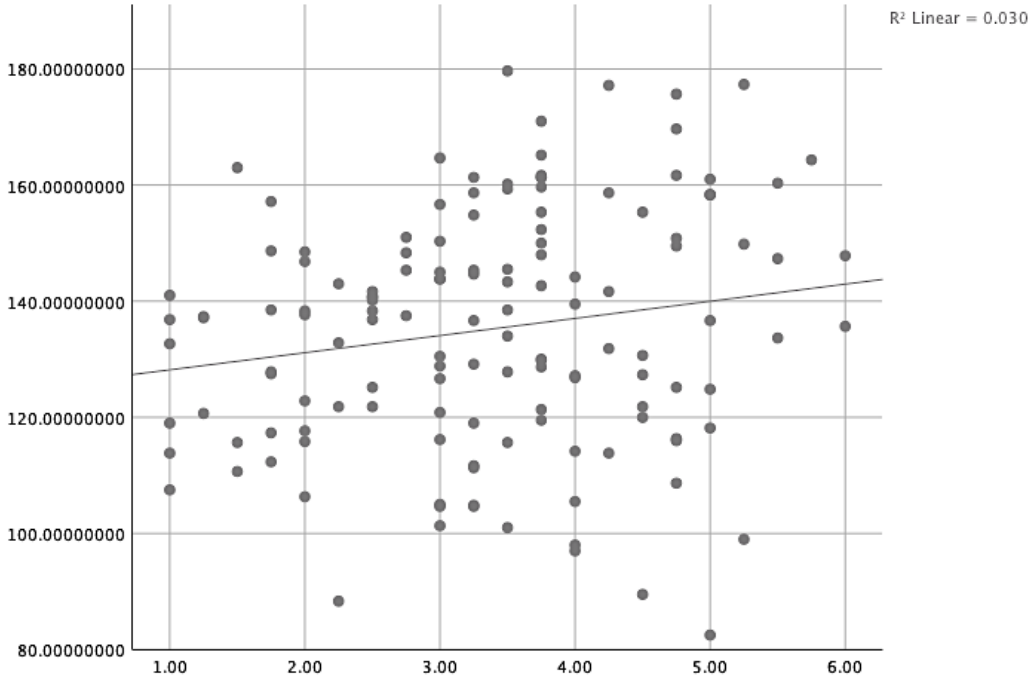
Variable	mean	SD	median	min	max	range	skew	kurt.	SE
EMI success	135.1	20.56	136.8	83	180	97	-.13	-.50	1.74
L2 ability	771	116.63	790	485	980	495	-.34	-.71	9.89
Preparatory performance	163	25.46	167.3	85	210	125	-.44	-.39	2.16
Self-efficacy	43.92	23.97	50.00	0	92	92	-.17	-.85	2.03
L2 self-concept	3.36	1.21	3.50	1.00	6.00	5.00	-.06	-.61	.10

Note: $n = 139$

Initial explorations of self-concept revealed a weak positive linear relationship between L2 self-concept and EMI success (see Figure 1), which was confirmed with a Pearson's correlation coefficient of 0.174 (p =.02). The R^2 value was 0.03, indicating that 3% of the variance in student EMI success (as measured by IB test scores) can be explained by a model containing only L2 self-concept.

[PLEASE INSERT FIGURE 1 HERE]

Figure 1. Scatterplot of L2 self-concept and EMI success



For our first analysis, we examined L2 ability (TOEIC scores), preparatory performance (ESP course test scores), and L2 self-concept as predictors of EMI success (IB test performance). A significant regression equation was found ($F(3, 135) = 54.359$, $p = .000$), with an R^2 of .547 (see Table 3). The model had two significant predictors: Preparatory performance (β = .608), and L2 ability (β = .239). However, as shown in Table 3, with a standardized β value of .057 (p = .368), L2 self-concept did not make a significant contribution to EMI success. Our findings indicate that L2 self-concept is not a statistically significant predictor of success in EMI, alongside preparatory

performance and L2 ability.

[PLEASE INSERT TABLE 3 HERE]

Table 3. Multiple Regression Output including L2 self-concept

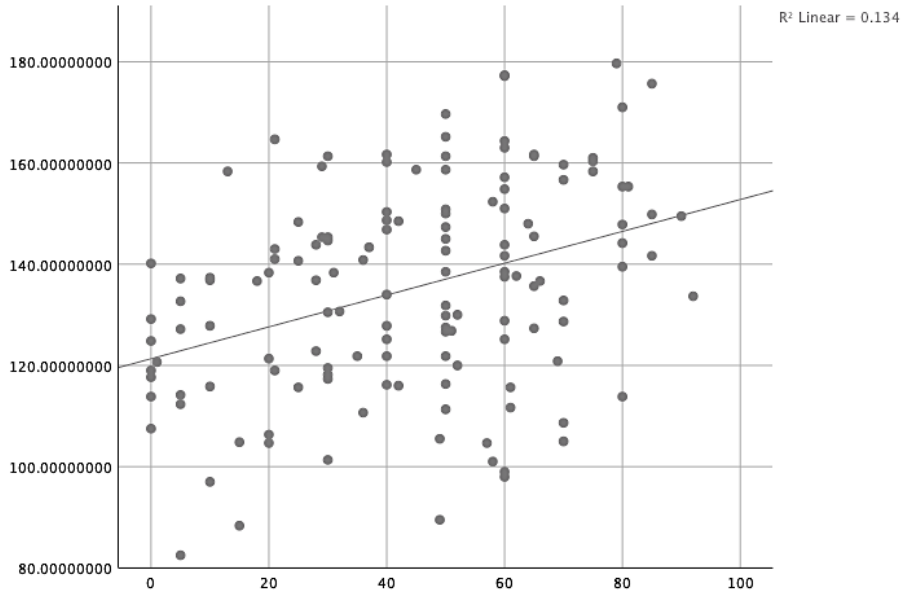
	ΔR^2	*B*	*SE B*	*Standardized β*	*t value*	*p value*
Constant	.547	19.45	9.517		2.044	.043
Preparatory performance		.491	.050	.608	9.736	.000
L2 ability		.042	.012	.239	3.513	.001
L2 self-concept		.976	1.080	.057	.904	.368

Note: Adjusted ΔR^2 = .537

In regards to self-efficacy, Figure 2 shows that there was a medium to weak positive linear relationship between self-efficacy and EMI success, with a Pearson's correlation coefficient of 0.367 (p =.00). The R^2 value was 0.134, which indicates that 13.4% of the variance in student EMI success (as measured by IB test scores) can be explained by a model containing only self-efficacy.

[PLEASE INSERT FIGURE 2 HERE]

Figure 2. Scatterplot of self-efficacy and EMI success



In our second analysis, a significant regression equation was found ($F(3, 135) = 57.5$, $p = .000$), with an R^2 of .561 (see Table 4). The significant predictors were Preparatory performance (β = .591), L2 ability (β = .203), and Self-efficacy (β = .145). The second model explained a greater proportion of variance and indicated that self-efficacy was a significant predictor of EMI success.

[PLEASE INSERT TABLE 4 HERE]

Table 4. Multiple Regression Output including self-efficacy

	ΔR^2	*B*	*SE B*	*Standardized β*	*t value*	*p value*
Constant	.561	24.438	9.520		2.567	.011
Preparatory performance		.477	.049	.591	9.659	.000
L2 ability		.036	.012	.203	3.035	.003
Self-efficacy		.124	.055	.145	2.263	.025

Note: Adjusted $\Delta R^2 = .551$

Self-efficacy and EMI success

While our quantitative results indicated that self-efficacy is an additional predictor—alongside L2 ability and language preparation—for success in EMI, our interview findings delineate the inter-relationship between these three variables. All of the students interviewed ($n = 7$) indicated the benefit of undertaking the ESP course to aid in their success of EMI study. Furthermore, similar to other research (Chang et al., 2017), they explicitly expressed a subsidiary benefit of ESP in developing their self-efficacy (usually represented as 'confidence' by participants) towards EMI study and success in the IB course. This was illustrated by the following interview excerpt:

> I would not be able to feel confident in my English medium lectures if I did not take ESP. The ESP teachers were accessible and personal compared to my IB lecturers, helping me gain confidence in studying my discipline in English. ESP was an ideal programme for me because I need a lot of support to prepare for my

> English medium lectures (Learner C, high English proficiency, high content score, 75% self-efficacy rating)

Specifically, the ESP preparatory course appeared to provide participants with opportunities to interact with the subsidiary tasks required of EMI study (e.g., discussion, asking questions), and to develop a deeper understanding of technical vocabulary required to interact with EMI lectures. In one example, Learner E, who had prior experience studying secondary school subjects in English, stated that:

> my ESP teacher introduced many practical examples to contextualise difficult technical words so that I was able to understand these words more effectively. ESP support made me more confident in preparing for my IB lectures (Learner E, high English proficiency, middle content score, 50% self-efficacy rating)

Although all participants saw the preparatory class as a positive influence upon their efficacy, two key patterns emerged from the interview data: (1) students with stronger efficacy reported putting in more effort; and (2) such participants were more likely to look upon activities as opportunities for development. In other words, our interview findings support the contention (see Pajares, 1996; Bandura, 1997) that students with stronger self-beliefs were more likely to put in extra effort and take advantage of efficacy forming opportunities.

Self-efficacy and effort

During their interviews, students were asked about the effort they put in to preparation for each EMI lecture, and whether they would prefer studying via Japanese. The three students with relatively low self-efficacy rankings (Students A, C, F) explained that they generally completed little preparation (around 20 – 30 minutes) for the IB lectures. For example, Learner G (low proficiency, low content score, 30% self-efficacy) revealed ‘I’m not doing much preparation, maybe 30 minutes’, while Learner E (high

proficiency, middle content score, 50% self-efficacy) explained that 'I do not really prepare, just do 20-30 minutes of review.' Furthermore, analysis of interview data also revealed that these participants were more likely to perceive studying through English as more challenging. For example, Learner G explained that 'studying in Japanese is easier and more efficient because I have to translate English sentences into Japanese in my head'.

On the other hand, students with stronger efficacy generally carried out approximately one hour of preparation (or more) for their EMI and preparatory classes. An example comes from Learner D (high proficiency, high content score, 70% self-efficacy), who indicated that he *usually* spent between 90 minutes to two hours in preparation for each class on reading and worksheets, 'but sometimes it took four or five hours.' Learner A (middle proficiency, high content score, 85% self-efficacy) discussed the personal value of such preparation, stating 'it takes much longer to study in English than Japanese, but I still think it's worth it', while Learner C (high English proficiency, high content score, 75% self-efficacy score) also added that 'I might take longer to prepare for EMI lectures than the Japanese equivalents but I'm highly motivated because I'm grateful for this rare opportunity to be able to study in English at university'. A high degree of self-efficacy therefore appears to be positively associated with students' attitudes towards learning through EMI.

The preparatory course as an opportunity for development

Findings suggested that students with stronger self-efficacy were more likely to report putting forth greater effort. Furthermore, such students were more likely to see the activities within the ESP preparation course as opportunities for development, while those with weaker efficacy reported less perseverance with their EMI study. Learner D (high English proficiency, high content score, 70% self-efficacy score), had graduated

from a Japanese-medium high school and focused on the difference in educational traditions, claiming that he was able to utilise the ESP class as a transition into 'Western' style lecture study that required more active engagement in lectures:

> 'ESP enabled me to improve confidence in asking questions in class. I can now freely and spontaneously ask questions in English when needed, which I did in the IB class. In high school or my other Japanese-medium lectures, we are generally expected to just sit down quietly and listen to teachers. However, in EMI, I think we are required to actively speak up to express our opinions.'

Learner A (medium English proficiency, high content score, 85% self-efficacy) was another who saw the preparatory class as an opportunity to develop his language ability and succeed in EMI. He indicated that his language ability was not yet satisfactory to succeed in all tasks, but exhibited a strong desire to participate in group discussions and ask questions since he believed that 'it is crucial to exchange ideas with peers in EMI to clarify my understanding and learn from others.'

This response to the challenge of EMI participation contrasted with those from participants with weaker efficacy. For example, Learner G (low English proficiency, low content score, 30% self-efficacy) expressed low efficacy to contribute to her EMI classes. She felt reluctant to actively participate in the EMI class with her (often higher English proficiency) peers, due to the difficulty she perceived of participating in spontaneous discourse. This negative emotional affect and perception of task difficulty appeared to influence her efficacy towards her studies through English, as she felt reluctant to actively participate in the EMI class:

> 'Because of my low English level, I am afraid to speak up in class. Even when I want to ask questions, I am not able to construct my questions quickly enough in English. I believe that having low confidence in my English makes me feel less willing to participate in English medium

lectures. This negative cycle consequently has a detrimental impact on my academic achievement.'

In summary, our interview data supported a reciprocal connection between perceptions of L2 ability, self-efficacy and academic performance. Individuals with stronger self-efficacy saw interactive class activities (such as discussions, and asking questions of teachers) as opportunities to develop, leading to language growth, higher EMI achievement and subsequently stronger self-efficacy. Such students were generally more likely to put extra effort into preparation, whereas low performing students often focused on their lack of confidence, usually attributed to a combination of low L2 ability and perceptions of task difficulty, which led to a negative cycle of less participation, weaker self-efficacy, and lower achievement.

To conclude, although our interview results are limited due to the low number of participants, the results are consistent with our quantitative findings which showed a significant relationship between performance and self-efficacy. Students in general saw a link between their own self-efficacy and their academic achievement. This association appeared to mediate their perceptions of L2 ability and task difficulty, as students drew on their (perceived) English ability as a means to make the most of EMI learning opportunities. This finding highlights the benefits of concurrent and targeted language support courses (such as the ESP course in our case) within EMI programme structures. It also highlights the dual benefit of such courses in developing the necessary linguistic knowledge to study content effectively, as well as enhancing learner self-efficacy.

Discussion and Conclusion

Our results indicate that self-efficacy is a direct predictor of EMI success, alongside L2 ability and preparatory performance (shown elsewhere, see Rose et. al., 2019). This finding is in alignment with results emerging from the wider field, as self-efficacy

beliefs have been found to predict achievement for bilingual students carrying out academic studies in a second language (e.g., Roo et al., 2018). Results also support the contention that self-efficacy beliefs are stronger predictors of performance in comparison to domain-level self-concept beliefs (Bandura, 1997; Pajares & Miller, 1994), and that self-belief measures with greater specificity are more predictive of performance (Bong et al., 2012). That is not to say that other self-beliefs may not indirectly influence EMI success, as studies have shown that self-efficacy beliefs may mediate the influence of self-concept and affective responses such as anxiety (Ferla, Valcke, & Cai, 2009); Pajares & Miller, 1994; Pietsch, Walker, & Chapman, 2003). Accordingly, the relationship between EMI success, self-efficacy, and other self-constructs requires further examination.

Taking their first EMI business course was a significant undertaking for many of the students in the research setting, however our interview findings indicate this undertaking was aided by a complex, reciprocal relationship between preparatory performance, L2 ability, and self-efficacy. The preparatory ESP course not only enhanced students' academic English but was also important for instilling a sense of confidence in the students to learn through a foreign language. It appears that the ESP class provided opportunities for students to develop competencies that they could bring to the IB course. In other words, the preparatory class provided opportunities, to some students, for enactive mastery experiences that led to stronger self-efficacy. Such findings are supported by those from the L2 literature, such as Graham (2011) who found that effective instruction in EAP courses had the potential to boost self-efficacy when listening to authentic lectures. In our study (and others, e.g., Chang et al., 2017), this relationship may have been enhanced due to the close relationship between the EMI content course and materials covered in the preparatory course.

Having said that, our findings also indicate that not all students could take advantage of the potentially efficacy enhancing opportunities provided by the preparatory class. English proficiency was a significant predictor variable for performance in the content course, and it appeared that students with lower proficiency strongly attended to (perceived) L2 ability when discussing their self-efficacy – especially with respect to perseverance in EMI preparation and participation. It could be that lower proficiency students may benefit from *more* language support while undertaking EMI study, and/or that at or above certain levels of L2 proficiency, self-efficacy and L2 ability reciprocally enhance each other (see Choi & Lee, 2016). This conclusion supports a previous study at another Japanese university, which found that while students above and below an IELTS threshold of 6.5 both experienced challenges, the students below the threshold experienced significantly greater challenges in content learning (Aizawa & Rose, 2019). Thus, while support classes are beneficial for all students in our study, they may be of particular importance for those of lower proficiency.

Limitations and areas of further research

As we examined EMI success within a real-world setting, our findings are limited by the measures employed. Although both of the International Business and ESP measures represent actual assessment measures used within the EMI program investigated, only summative total scores for each student were available. Further, although the measure of self-efficacy was designed in accordance with guidelines for efficacy item development (Bandura, 2006), this construct was measured with a single item. Accordingly, reliability estimates for each of these measures were not able to be calculated. Further to this, measures such as TOIEC may be viewed by some researchers as a crude measure of general English proficiency. While the TOIEC score

in our case was ecologically valid (in that it was used in this research setting to evaluate student proficiency), a more nuanced and content-specific measure of academic English proficiency might have revealed a greater role of proficiency in predicting EMI success.

Our findings are also limited by the relatively small number of students who volunteered to participate in interviews. Although the participants are fairly representative of the wider student population (e.g., 3 females, 4 males; a range of grades for the EMI and ESP course; a range in self-efficacy scores), students with stronger and more positive self-beliefs may have opted-in to this study. Students who volunteered for the follow-up interviews appeared to generally have higher TOEIC scores and stronger self-efficacy scores than the full student cohort. Future studies could expand on ours by obtaining participants from a wider range of backgrounds in order to correspond to maximum variation.

Accordingly, future studies could develop multi-item measures of course specific self-efficacy and run more complicated statistical analyses such as a Structural Equation Model. Additionally, few studies have examined what predicts success in EMI. Future studies could replicate this study in a different context, as well as investigate other non-cognitive factors, such as other self-beliefs, motivational constructs, and self-regulatory cognitions. Furthermore, the academic subject of international business could be described as an internationally-oriented subject (see Macaro, 2018). Therefore, future research into other academic subject areas may discover a different relationship between language proficiency, non-cognitive factors such as self-efficacy, and content learning performance.

Conclusions and Implications

Our study is one of the first to examine factors that may influence the self-efficacy

beliefs of EMI learners. Our quantitative analysis revealed that self-efficacy was a statistically significant predictor of success in EMI, alongside preparatory performance and L2 ability. Our qualitative data further highlighted the importance of language support courses, both before and during EMI study, in promoting student self-efficacy and for ensuring a greater chance of academic success. Positive self-beliefs appear related to student effort and perseverance in EMI preparation.

Implications of these findings suggest that EMI students in similar contexts would greatly benefit from *tailored* and *targeted* language support classes. This claim is built on the fact that the context in which this study took place offered specific language support classes that were tailored to the EMI course requirements and, therefore, the immediate needs of many students. That is not to say that the preparatory program at the site of the current study was able to provide efficacy enhancing opportunities to all students; indeed, our findings indicate that L2 ability directly and indirectly influences EMI success most strongly for lower proficiency students. Thus, further efforts may be needed to attend to language and student self-efficacy development.

Nevertheless, other EMI programs might benefit from the inclusion of context- and content-specific language courses for students undertaking EMI courses for the first time. These courses should ideally include a mixture of both language preparatory courses of a general academic English nature, as well as ongoing courses tailored to the specific needs of each EMI course. Naturally, this structural arrangement of a curriculum would require both content teachers and language teachers to work closely together to ensure synergy between the two courses. Such a structure may improve student performance on the courses, as well as directly (and indirectly) improving students' self-efficacy to undertake further EMI study.

References

Airey, J. (2012). 'I don't teach language.' The linguistic attitudes of physics lecturers in Sweden. *AILA Review*, 25, 64–79.

Aizawa, I. & Rose, H. (2019). An analysis of Japan's English as medium of instruction initiatives within higher education: the gap between meso-level policy and micro-level practice. *Higher Education*. Volume 77(6), 1125–1142. https://doi.org/10.1007/s10734-018-0323-5

Ardasheva, Y., Carbonneau, K. J., Roo, A. K., & Wang, Z. (2018). Relationships among prior learning, anxiety, self-efficacy, and science vocabulary learning of middle school students with varied English language proficiency. *Learning and Individual Differences*, 61, 21–30. https://doi.org/10.1016/J.LINDIF.2017.11.008

Bandura, A. (1997). *Self efficacy: The exercise of control*. New York: W.H Freeman and Company.

Bandura, A. (2006). Guide for constructing self-efficacy scales. In F Pajares & T. C. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307–337). Greenwich, CT: Information Age.

Bong, M., Cho, C., Ahn, H. S., & Kim, H. J. (2012). Comparison of Self-Beliefs for Predicting Student Motivation and Achievement. *The Journal of Educational Research*, *105*(5), 336–352. https://doi.org/10.1080/00220671.2011.627401

Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review*, *15*(1), 1–40.

Bradford, A. (2018). It's not all about English! The problem of language foregrounding in English-medium programmes in Japan. *Journal of Multilingual and Multicultural Development*, 1–14. https://doi.org/10.1080/01434632.2018.1551402

Chao, C. N. G., McInerney, D. M., & Bai, B. (2018). Self-efficacy and Self-concept as Predictors of Language Learning Achievements in an Asian Bilingual Context. *The Asia-Pacific Education Researcher*, 1–9. https://doi.org/10.1007/s40299-018-0420-3

Chang, J.-Y., Kim, W., & Lee, H. (2017). A language support program for English-medium instruction courses: Its development and evaluation in an EFL setting. *International Journal of Bilingual Education and Bilingualism*, *20*(5), 510–528. https://doi.org/10.1080/13670050.2015.1080658

Choi, E., & Lee, J. (2016). Investigating the relationship of target language proficiency and self-efficacy among nonnative EFL teachers. *System*, *58*, 49–63.

Choi, N. (2005). Self-efficacy and self-concept as predictors of college students' academic performance. *Psychology in the Schools*, *42*(2), 197–205. https://doi.org/10.1002/pits.20048

Costa, F. (2012). Focus on form in ICLHE lecturers in Italy. Evidence from English-medium science lectures by native speakers of Italian. *AILA Review*, *25*, 30–47. https://doi.org/10.1075/aila.25.03cos

Ferla, J., Valcke, M., & Cai, Y. (2009). Academic self-efficacy and academic self-concept: Reconsidering structural relationships. *Learning and Individual Differences*, *19*(4), 499–505. https://doi.org/10.1016/J.LINDIF.2009.05.004

Galloway, N., Kriukow, J., & Numajiri, T. (2017). *Internationalisation, higher education and the growing demand for English: an investigation into the English medium of instruction (EMI) movement in China and Japan*. Retrieved 30 October 2017, from TeachingEnglish | British Council | BBC website:

https://www.teachingenglish.org.uk/article/internationalisation-higher-education-growing-demand-english-investigation-english-medium
Graham, S. (2011). Self-efficacy and academic listening. *Journal of English for Academic Purposes*, *10*(2), 113–117. https://doi.org/10.1016/j.jeap.2011.04.001
Hackett, G., & Betz, N. E. (1989). An Exploration of the Mathematics Self-Efficacy/Mathematics Performance Correspondence. *Journal for Research in Mathematics Education*, *20*(3), 261. https://doi.org/10.2307/749515
Harrington, M., & Roche, T. (2014). Identifying academically at-risk students in an English- as-a-Lingua-Franca university setting. *Journal of English for Academic Purposes*, 15, 37–47.
Huberman, A. M., & Miles, M. B. (2002). *The qualitative researcher's companion*. Thousand Oaks, CA: Sage.
Iino, M. (2018). EMI (English-medium instruction) in Japanese higher education. In K. Murata (Ed.), *English-Medium Instruction from an English as a Lingua Franca Perspective: Exploring the Higher Education Context* (pp. 145–165). New York: Routledge.
Iwaniec, J. (2014). Motivation of pupils from southern Poland to learn English. *System*, *45*, 67–78. https://doi.org/10.1016/J.SYSTEM.2014.05.003
Keith, T. Z. (2015). *Multiple Regression and Beyond: An Introduction to Multiple Regression and Structural Equation Modelling* (2nd ed.). New York: Routledge.
Lasagabaster, D. (2016). The relationship between motivation, gender, L1 and possible selves in English-medium instruction. *International Journal of Multilingualism*, *13*(3), 315–332. https://doi.org/10.1080/14790718.2015.1105806
Li, M. (2018). The effectiveness of a bilingual education program at a Chinese university: a case study of social science majors. *International Journal of Bilingual Education and Bilingualism*, *21*(8), 897–912.
Lin, L. (2015). Investigating Chinese HE EFL classrooms: Using collaborative learning to enhance learning. Berlin Heidelberg: Springer-Verlag.
Liu, R.-D., Zhen, R., Ding, Y., Liu, Y., Wang, J., Jiang, R., & Xu, L. (2018). Teacher support and math engagement: roles of academic self-efficacy and positive emotions. *Educational Psychology*, 38(1), 3–16. https://doi.org/10.1080/01443410.2017.1359238
Liu, X., Gao, X., & Ping, S. (2019). Post-1990s College Students Academic Sustainability: The Role of Negative Emotions, Achievement Goals, and Self-efficacy on Academic Performance. *Sustainability*, 11(3), 775. https://doi.org/10.3390/su11030775
Macaro, E. (2018). *English Medium Instruction*. Oxford, United Kingdom: Oxford University Press.
Macaro, E., Curle, S., Pun, J., An, J., & Dearden, J. (2018). A systematic review of English medium instruction in higher education. *Language Teaching*, *51*(01), 36–76. https://doi.org/10.1017/S0261444817000350
Ministry of Education, Culture, Sports, Science and Technology (MEXT). (2014). *Heisei 26 nendo no daigaku ni okeru kyōiku naiyō-tō no kaikaku jōkyō ni tsuite (gaiyō) [About the state of affairs regarding university reforms to education in 2015]*. Tokyo: MEXT. Retreived from http://www.mext.go.jp/a_menu/koutou/daigaku/04052801/__icsFiles/afieldfile/2016/01/27/1353488_01.pdf
Mercer, S. (2008). Learner self-beliefs. *ELT Journal*, *62*(2), 182–183.

Mills, N., Pajares, F., & Herron, C. (2007). Self-efficacy of college intermediate French students: Relation to achievement and motivation. *Language Learning*, 57(3), 417–442.

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, *38*(1), 30–38. https://doi.org/10.1037/0022-0167.38.1.30

Pajares, Frank. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, *66*(4), 543–578.

Pajares, Frank, & Miller, M. D. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: A path analysis. *Journal of Educational Psychology*, *86*(2), 193–203. https://doi.org/10.1037/0022-0663.86.2.193

Parker, P. D., Marsh, H. W., Ciarrochi, J., Marshall, S., & Abduljabbar, A. S. (2014). Juxtaposing math self-efficacy and self-concept as predictors of long-term achievement outcomes. *Educational Psychology*, *34*(1), 29–48. https://doi.org/10.1080/01443410.2013.797339

Phakiti, A., Hirsh, D., & Woodrow, L. (2013). It's not only English: Effects of other individual factors on English language learning and academic learning of ESL international students in Australia. *Journal of Research in International Education*, *12*(3), 239–258. https://doi.org/10.1177/1475240913513520

Pietsch, J., Walker, R., & Chapman, E. (2003). The relationship among self-concept, self-efficacy, and performance in mathematics during secondary school. *Journal of Educational Psychology*, 95(3), 589–603. https://doi.org/10.1037/0022-0663.95.3.589

Roo, A. K., Ardasheva, Y., Newcomer, S. N., & Vidrio Magaña, M. (2018). Contributions of tracking, literacy skills, and attitudes to science achievement of students with varied English proficiency. *International Journal of Bilingual Education and Bilingualism*, 1–17. https://doi.org/10.1080/13670050.2018.1434125

Rose, H., Curle, S., Aizawa, I., & Thompson, G. (2019). What drives success in English medium taught courses? The interplay between language proficiency, academic skills, and motivation. *Studies in Higher Education*, 1–13. https://doi.org/10.1080/03075079.2019.1590690

Rose, H., & McKinley, J. (2018). Japan's English-medium instruction initiatives and the globalization of higher education. *Higher Education*, *75*(1), 111–129. https://doi.org/10.1007/s10734-017-0125-1

Taguchi, N. (2014). English-medium education in the global society. *International Review of Applied Linguistics in Language Teaching*, *52*(2), 89-98.

Thompson, G. (2018). Insights for Efficacy Development from an Exploration of Japanese Business Management Students' EAP Self-Efficacy Beliefs. *The Asian ESP Journal*, *14*(7.1), 244–284.

Appendix A: Example of self-beliefs survey items

1. Self-efficacy item (designed in accordance with efficacy item guidelines, see Bandura, 2006):

- How confident are you that you can achieve a high grade (over 80%) in International Business (IB) when the course is offered in English?

2. L2 self-concept items (adapted from Iwaniec [2014]):

- I have always done well in English.
- I usually get good marks in English.
- Compared to other students I'm good at English.
- Studying English comes easy to me.

3. Interview questions (English translation of Japanese version used)

- Do you think you have gained content knowledge in EMI courses?
- Has the language of instruction influenced your content learning?
- If you don't understand EMI lectures, what do you do?
- What support do you receive at the university to help you attend EMI lectures?
- How much English do you think you need to effectively learn in EMI courses?
- What are the main challenges you face in EMI courses?
- Do you face any challenges regarding the following aspects of academic English (Writing, Listening, Speaking, Reading skills, Technical vocabulary)?
- What is the amount of time spent on class preparation for each class period?
- Is the amount of time spent on preparation shorter in JMI than EMI courses?
- Do you agree that EMI should expand in higher education?
- Can you think of benefits EMI brings?

- What is your motivation to study through EMI?
- Do you think you can effectively participate in in-class activities through EMI?
- Are you confident in learning content through EMI?
- If Japanese is used, would you say you understand your courses better?
- Do you think you are learning content in English as well as when learning in Japanese?
- If the same course is offered in both English and Japanese, which language would you select?